

BB-C-120C
April 23, 1980
SUPERSEDING
Fed. Spec. BB-C-120B
March 1, 1971

FEDERAL SPECIFICATION

CHLORINE, TECHNICAL: LIQUID

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal Agencies.

1. SCOPE

1.1 Scope. This specification covers one grade of liquid chlorine, technical.

2. APPLICABLE DOCUMENTS

2.1 Specification and Standards. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Military Specifications:

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| MIL-V-2 | - Valve, Cylinder, Gas (for Compressed or Liquefied Gases), General Specification for. |
| MIL-T-704 | - Treatment and Painting of Material. |
| MIL-C-3250 | - Cylinder, Gases and Liquids, One-Ton, Type D. |
| MIL-C-11732 | - Cylinder, Compressed Gas: Chlorine; DOT 3A or DOT 3AA. |

Federal Standards:

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| FED-STD-H28 | - Screw-Thread Standards for Federal Service. |
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Military Standards:

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| MIL-STD-101 | - Color Code for Pipelines and for Compressed-Gas Cylinders. |
| MIL-STD-105 | - Sampling Procedures and Tables for Inspection by Attributes |
| MIL-STD-1141 | - Inspection and Maintenance of Compressed Gas Cylinders. |

(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

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Department of Transportation:

- 49 CFR 171-190 - Code of Federal Regulations Title 49.
- 40 CFR - Code of Federal Regulations Title 40.

(Application for copies should be addressed to the Department of Transportation, Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.)

American Society for Testing Materials (ASTM):

- E 412 - Assay of Liquid Chlorine, Zinc Amalgram Method, Test For.

(Application for copies should be addressed to the American Society for Testing Materials, 1916 Race Street, Philadelphia, PA 19103.)

Chlorine Institute:

- Phamphlet No. 17 - Cylinder and Ton Container Procedure for Chlorine Packaging.

(Application for copies should be addressed to the Chlorine Institute, 342 Madison Avenue, New York, NY 10017.)

3. REQUIREMENTS

3.1 Material. The chlorine shall be 99.5 percent pure by volume.

3.2 Containers and valves. The chlorine shall be contained in Government-furnished containers in accordance with 49 CFR 171-190 and equipped with valves with outlet connection No. 660 or 820 (see 6.3) in accordance with FED-STD-H28. When specified (see 6.2), containers shall be furnished by the contractor and shall be in accordance with either MIL-C-11732 (cylinders) or MIL-C-3250 (1-ton containers), as specified, and shall be equipped with valves in accordance with MIL-V-2. When specified (see 6.2), the chlorine shall be contained in contractor-owner DOT approved containers.

3.3 Container maintenance. Government and Contractor furnished containers that require maintenance shall be processed by the contractor for serviceability to meet the requirements of this specification, 49 CFR 171-190, Chlorine Institute Phamphlet No. 17 (see 6.4) and MIL-STD-1411.

3.3.1 Painting. Government-furnished containers for chlorine requiring repainting, shall be cleaned, treated, and painted in accordance with MIL-T-704. Each cylinder shall be color coded and marked in accordance with MIL-STD-101.

3.3.2 Valves. Unless otherwise specified (see 6.2), replacement valves for defective valves in Government-furnished containers shall be contractor furnished and shall be in accordance with MIL-V-2.

3.4 Capacity. Containers shall be filled to rated capacity. The weight of chlorine supplied in each container shall be the difference between the filled weight and the unfilled tare weight of the container (see 6.5).

3.5 Leakage. Containers and valves shall not leak after being filled.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Classification of inspection. Inspection shall be classified as follows:

- (a) Quality conformance inspection (see 4.3).
- (b) Inspection of preparation of delivery (see 4.5).

4.3 Quality conformance inspection.

4.3.1 Sampling. Sampling shall be from the filled containers and shall be as follows:

- (a) Cylinders and 1-ton containers selected in accordance with MIL-STD-105, inspection level S-2. All cylinders, or 15 or less 1-ton containers, filled from the same source on the same day shall be considered an inspection lot.
- (b) Each tank car or the loading line for each tank car when filling.
- (c) Bulk storage tank unless otherwise specified (see 6.2), bulk liquid chlorine used exclusively for filling an entire order of small containers may be sampled and tested prior to the actual transfer.

4.3.2 Examination. Each container shall be examined as specified in

4.4.1. One or more defects shall be cause for rejection.

4.3.3 Tests.

4.3.3.1 Individual. Each container shall be tested for leakage as specified in 4.4.2.2. Failure of the test shall be cause for rejection.

4.3.3.2 Samples. Samples selected in accordance with 4.3.1 shall be tested as specified in 4.4.2.1. AQL shall be 4.0 percent defective.

4.4 Inspection procedure.

4.4.1 Examination. The filled chlorine containers shall be examined as specified herein for the following defects:

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101. Material not as specified (see 3.1).
102. Container and valve not as specified (see 3.2).
103. Container maintenance not as specified (see 3.3).
104. Painting not as specified (see 3.3.1).
105. Capacity not as specified (see 3.4).

4.4.2 Tests.

4.4.2.1 Assay test. ASTM E412 shall be the standard assay test method. An assay of less than 99.5 percent chlorine gas shall constitute failure of this test.

4.4.2.1.1 Alternate test method. In lieu of the assay test method, chlorine purity may be determined by methods of gas chromatography. In case of dispute, the assay test method shall be the standard.

4.4.2.2 Leakage. Each container after filling shall be tested for leakage by holding a cloth soaked with ammonia-water (commercial 26 deg. Be) close to potential leakage areas. The cloth should be tied to the end of a stick. Care shall be taken to avoid contact of ammonia-water with brass. A white cloud of ammonium chloride will result if there is any chlorine leakage. As an alternate method a puff of ammonia vapor may be blown from a plastic squeeze bottle containing aqua ammonia (or fairly concentrated ammonia hydroxide) over the area of potential leakage. Caution: Liquid aqua ammonia must not be squirted on pipe or fittings. Any evidence of leakage shall constitute failure of this test.

4.5 Examination of preparation for delivery. An examination shall be made to determine compliance with the requirements of Section 5. The sample unit shall be one shipping container fully prepared for delivery. Sampling shall be in accordance with MIL-STD-105. The inspection level shall be S-5 with an AQL of 4.0 expressed in terms of percent defective.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Chlorine shall be packaged for shipment in accordance with the provisions of CFR title 49 and as specified in the contract or order (see 6.2).

5.2 Packing. When specified (see 6.2), cylinders shall be palletized in accordance with MIL-STD-147 (see 6.7).

5.3 Marking. The containers shall be marked in accordance with 49 CFR and as specified in the contract or order (see 6.2). Marking for military agencies shall be in accordance with MIL-STD-129 (see 6.7). For chlorine used in sanitary applications (see 6.1) 40 CFR shall also apply.

6. NOTES

6.1 Intended use. The chlorine covered by this specification is intended for use in:

- (a) Manufacture of inorganic and organic chemicals.
- (b) Sanitation; that is, control of bacteria and algae mold in municipal and industrial waters and sewage and other wastes.
- (c) Disinfectant for swimming pools; sterilization of utensils and containers; bleaching of cotton, linen, and rags; and for other general-purpose uses.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) When contractor-furnished containers are required, and specification to which containers shall conform (see 3.2).
- (c) When chlorine is required to be contained in contractor-owned containers (see 3.2).
- (d) When Government-furnished replacement valves are to be utilized (see 3.3.2).
- (e) When size of order does not warrant sampling from bulk liquid storage tank (see 4.3.1. (c)).
- (f) When palletization of cylinders is required (see 5.2).

6.3 Valve outlet. Valve outlet 660 is presently utilized in Government owned cylinders. As a result of efforts by the compressed gas industry to standardize valve connectors for all gases outlet No. 660 is due to become obsolete on January 1, 1987. A program will be instituted by the Government during this transaction period to switch to the preferred chlorine connection No. 820.

6.4 Maintenance of Government-furnished containers. Purchasers should specify the extent to which Government-furnished containers that require maintenance should be processed by the gas contractor.

6.4.1 Container services. The gas contractor should furnish at no additional cost, all services which are required at each and every filling of a container to comply with applicable regulations and normal good practice. Such services would include, but not be limited to, all inspection, testing, evacuation, and handling services required for the gas supplied.

6.4.2 Schedule of fees. A schedule of allowable fees should be specified by the purchaser for the gas contractor's performance of service such as the replacement of valves, valve parts, and cylinder caps, hydrostatic testing, cleaning, painting, color/coding, marking, and handling of unserviceable containers as required. All materials and components for these services should be furnished by the gas contractor.

6.5 Chlorine should be purchased by weight.

6.6 Government-furnished property. Unless otherwise specified, the contracting officer should arrange to furnish the cylinders specified in 3.2.

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6.7 Specifications and standards applicable to military (levels A and B) preparation for delivery requirements. In addition to the documents listed in 2.1, the following documents of the issue in effect on date of invitation for bids or request for proposal, form a mandatory part of this specification for military procurements. Where level A or B packaging and packing are specified:

Military standards

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| MIL-STD-129 | - Marking for Shipment and Storage. |
| MIL-STD-147 | - Palletized and Containerized Unit Loads 40" x 48" Pallets, Runners, or Pallet-type Base. |

MILITARY INTEREST

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| Custodian: | Preparing activity |
| Army - ME | Army - ME |
| Air Force - 68 | |

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| Review activities: | CIVIL AGENCIES COORDINATING ACTIVITIES: |
| Navy - MS | GSA - FSS |
| | HEW - FDA, NIH |
| | VA - DMS |

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| User activities: | Project 6830-0101 |
| Navy - YD | |

Orders for this publication are to be placed with General Service Administration, acting as an agent for the Superintendent of Documents. See Section 2 of this specification to obtain extra copies and other documents referenced herein.